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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/595,717	03/16/2007	Luca Zanichelli	9526-87 (187404)	5232
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EXAMINER				
AKRAM, IMRAN				
ART UNIT		PAPER NUMBER		
1723				
NOTIFICATION DATE		DELIVERY MODE		
06/28/2011		ELECTRONIC		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

ip@akerman.com

Office Action Summary

Application No.

10/595,717

Applicant(s)

ZANICHELLI, LUCA

Examiner

IMRAN AKRAM

Art Unit

1723

Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 April 2011.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1, 2 and 4-6 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 2 and 4-6 is/are rejected.
- 7) ☒ Claim(s) 1, 2 and 4-6 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-942)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed 4/28/11 have been fully considered but they are not persuasive. The reference rejections still apply, albeit in different form as necessitated by amendment.
2. Applicant asserts on page 4 that the USC 112 rejection should be withdrawn because the specification provides support for the feature "said gas flows being fed into said reactor in a predetermined feed direction substantially coaxial to a longitudinal axis of said reactor" in lines 4-6. Examiner respectfully disagrees. While it is quite clear that the oxygen and fuel gas flow in parallel during the initial portion of the reactor, as Applicant states, the specification defines the reactor as feature **1** in Figure 1 and the claim states that the gases are fed into the reactor substantially coaxial to the longitudinal axis of the reactor. This is not true. The hydrocarbon is fed through feature **11** of Figure 1 to the reactor, which is perpendicular to the reactor. Applicant is advised to more clearly define this feature as the USC 112 rejection stands.
3. In response to applicant's argument that Tanaka is nonanalogous art to the Bedetti, it has been held that a prior art reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the applicant was concerned, in order to be relied upon as a basis for rejection of the claimed invention. See *In re Oetiker*, 977 F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992). In this case, both the Tanaka and Bedetti reference relate to the reforming art. Searching the teachings of Tanaka to improve the process of Bedetti

would have been appropriate as they both pertain to reforming hydrocarbons. Tanaka is not relied upon for features which are specific to the distinctions between Bedetti and Tanaka (i.e. autothermal reforming or fuel cells), but rather the advantages of imparting the better mixing of Tanaka, which would be advantageous in Bedetti.

4. Applicant also states on page 6 of the Arguments that Tanaka does not teach that the oxygen and hydrocarbon are reacted upon mixture. Bedetti does disclose this feature and is the primary reference, however. Modifying Bedetti with the swirling motion of Tanaka would not alter the feature disclosed by Bedetti.

Claim Objections

5. Claims 1, 2, and 4-6 are objected to because of the following informalities: line 5 of claim 1 recites "direction substantially coaxial, to a longitudinal axis of said reactor." That comma is extraneous and was removed in the prior claim amendment but reappears in this one. Appropriate correction is required.

Claim Rejections - 35 USC § 112

6. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

7. Claims 1, 2, and 4-6 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to

one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Claim 1 has been amended to recite that "said gas flows being fed into said reactor in a predetermined feed direction substantially coaxial to a longitudinal axis of said reactor" in lines 4-6. However, figure 1 and page 6, lines 20-24 of the instant application disclose that the hydrocarbon gas feed is generally perpendicular to the longitudinal axis of reactor. This is new matter. Claims 2 and 4-6 depend on claim 1.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

10. Claims 1, 2, and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bedetti (WO/2000/047517)—US 7,048,772 B1 used for citation purposes—in view of Tanaka (US 2003/0188486 A1).

11. Regarding claim 1, Bedetti discloses a method comprising: feeding a first gas flow comprising hydrocarbons through a first duct **13** and a second gas flow comprising oxygen through a second duct **12** into a reforming reactor **1**, the ducts being coaxial to a longitudinal axis **A** of the reactor **1**, the hydrocarbon and oxygen flows being kept separate for an initial part of the reactor (see figure 1); and mixing the gas flows for combustion in the reactor downstream of the initial portion (column 3, lines 17-31). Bedetti discloses that the fuel and oxygen are reacted upon mixture (see abstract). Bedetti does not disclose a swirling device within the second duct. Tanaka—in an invention for a reformer with multiple reaction zones housed within a cylindrical shell—discloses the use of a swirler **21** located within an entry duct of the reaction chamber for the combustion mixture to impart circulation and mixing of the fuel and air (paragraph 50). It would have been obvious to one having ordinary skill in the art at the time of invention to add the swirling plate of Tanaka to the second duct of Bedetti to impart a swirling motion to the fuel of Bedetti and effect mixing between the air and fuel and increase combustion efficiency as suggested by Tanaka.

12. Regarding claims 2 and 4, Bedetti discloses that the second duct **12** has the oxygen gas flow (column 5, lines 52-55) and is arranged within and coaxial to the first duct **13** (see figure 1).

13. Claims 5 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bedetti and Tanaka as applied to claims 2 and 1, respectively, above, and further in view of Pettit.

14. Bedetti and Tanaka do not disclose a second swirling device in the first duct. Pettit—in an invention for a upright, cylindrical reformer with multiple reaction zones—discloses a second duct **20** and a first cylindrical duct **500** having a substantially vertical axis wherein the second duct contains a swirling device **38** capable of imparting a swirling motion to a fluid which crosses it (paragraph 27). Pettit discloses that the swirling motion of the air is opposite to that of the fuel to lower mixing time (paragraph 51. It would have been obvious to one having ordinary skill in the art at the time of invention to add the second swirling device of Pettit to the first duct of Bedetti and Tanaka to impart a counter-flow to the fuel input of Bedetti and Tanaka to decrease mixing time.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to IMRAN AKRAM whose telephone number is (571)270-3241. The examiner can normally be reached on 10-7 Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Alexa Neckel can be reached on 571-272-1446. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Imran Akram/
Examiner, Art Unit 1723